USER MANUAL

Accessory 12C

Vacuum Fluorescent Display Unit

4Ax-603601-xUxx

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DELTA TAU
Data Systems, Inc.
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INTRODUCTION

PMAC's Accessory 12C (ACC-12C) is a 2x40 character Vacuum Fluorescent Display unit which interfaces to all versions of PMAC via their 14-pin Display Connector J1 (JDISP). This accessory is assembled from two separate boards: the Vacuum Fluorescent board (manufactured by IEE Inc.) and the bottom adapter board (manufactured by Delta Tau Inc.). The package includes a 6' long 14-pin flat cable for connection to PMAC's J1 connector and a bezel with a mounted glass filter.

Refer to the enclosed schematic diagrams for dimensions and panel mounting information.

SETUP PROCEDURE

To use ACC-12C in conjunction with PMAC simply connect its J1 connector to PMAC's J1 connector via the provided flat cable. In addition, the following PMAC memory write statements should be executed:

```
1. WY:$7D0,$16      ; tells PMAC that the display unit is ACC-12C as
                    ; opposed to ACC-12 or ACC-12A
2. WX:$FFFE,$xxx4   ; for extra display wait states for the standard
                    ; 20MHz PMAC

   or

   WX:$FFFE,$xxx7   ; for extra display wait states for the 30 MHz PMAC
                     ; (PMAC+Option 5)
```

However, the three most significant hexadecimal digits (`$xxx.`) must not be changed. These digits are set by PMAC's firmware at the power on initialization stage based on the positions of the memory wait state hardware jumpers. Therefore prior to the execution of step 2 above, a `RHX:$FFFE,1` command should be executed to check the value of the three most significant hexadecimal digits for a particular PMAC.

Example: If a `RHX:$FFFE,1` returns $1113 (one wait state for memory), then the step 2 above should be `WX:$FFFE,$1114` for the standard 20 MHz version of PMAC , or `WX:$FFFE,$1117` for the 30 MHz version of PMAC.

Note

The memory write command in the step 2 above must be executed once per power cycle initialization or a PMAC reset. To do this, a PLC program may be used which disables itself after the memory write command execution.

Example: With I5=2 or 3, the following PLC program may be used:

```
OPEN PLC 1
CLEAR
CMD "WX:$FFFE,$xxx4"
DISABLE PLC 1
CLOSE
```

DISPLAY COMMANDS

Refer to the PMAC User's Manual for the details of available Display commands. Currently, these commands may be issued either from within Motion programs or PLC programs. **Example:** To display a message starting at the tenth character on the screen, the following command is used:

```
DISPLAY 10"This is a Message"
```

To display a PMAC variable (e.g. P100) starting at the character location 20 and with 8 digital total 3 after the decimal point, the following command may be used:

```
DISPLAY 20,8.3,P100
```

Note

PMAC's display buffer is 80 character wide with location 0 being the upper left, 39 the upper right, 40 the lower left and 79 the lower right.

CONNECTORS

Refer to the enclosed schematic drawing of the adapter board.

J1(JDISP)

This is a 14-pin Header which is pin-to-pin compatible with the PMAC's J1 connector and should be connected to PMAC's J1 via the supplied flat cable.

P1

This is a 14-pin connector used for the piggyback connection of the adapter board to the main display board.

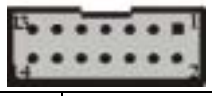
TB1

This 2-pin terminal block allows an alternative method of power supply connection to the display unit. Note that E1 should be removed if power is supplied via this connector. Moreover, if the connecting cable between the PMAC and the ACC-12A is longer than 6', use of this connector for the direct supply of power is strongly recommended.

CONNECTOR PINOUTS

Headers and Terminal Block Connectors

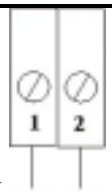
J1 (JDISP 14-Pin Header)

Top View 

Pin #	Symbol	Function	Description	Notes
1	Vdd	Input	+5V Power	E1 must be installed
2	Vss	Common	PMAC Common	
3	RS	Input	Read Strobe	TTL sig. Input
4	Vee	Input	Contrast Adjust Vee	0 to +5V dc
5	E	Input	Display Enable	High is Enable
6	R/W	Input	Read or Write	TTL signal Out
7	DB1	Bidirectional	Display Data 1	TTL level
8	DB0	Bidirectional	Display Data 0	TTL level
9	DB3	Bidirectional	Display Data 3	TTL level
10	DB2	Bidirectional	Display Data 2	TTL level
11	DB5	Bidirectional	Display Data 5	TTL level
12	DB4	Bidirectional	Display Data 4	TTL level
13	DB7	Bidirectional	Display Data 7	TTL level
14	DB6	Bidirectional	Display Data 6	TTL level

This is a 14-pin Header that is pin-to-pin compatible with the PMAC's J1 connector and should be connected to PMAC's J1 via the supplied flat cable.

TB1 (2-Pin Terminal Block)



Top View

Pin #	Symbol	Function	Description	Notes
1	GND	Common	Digital Ground	
2	+5V	Input	+5V Supply	Alternative Power Supply*

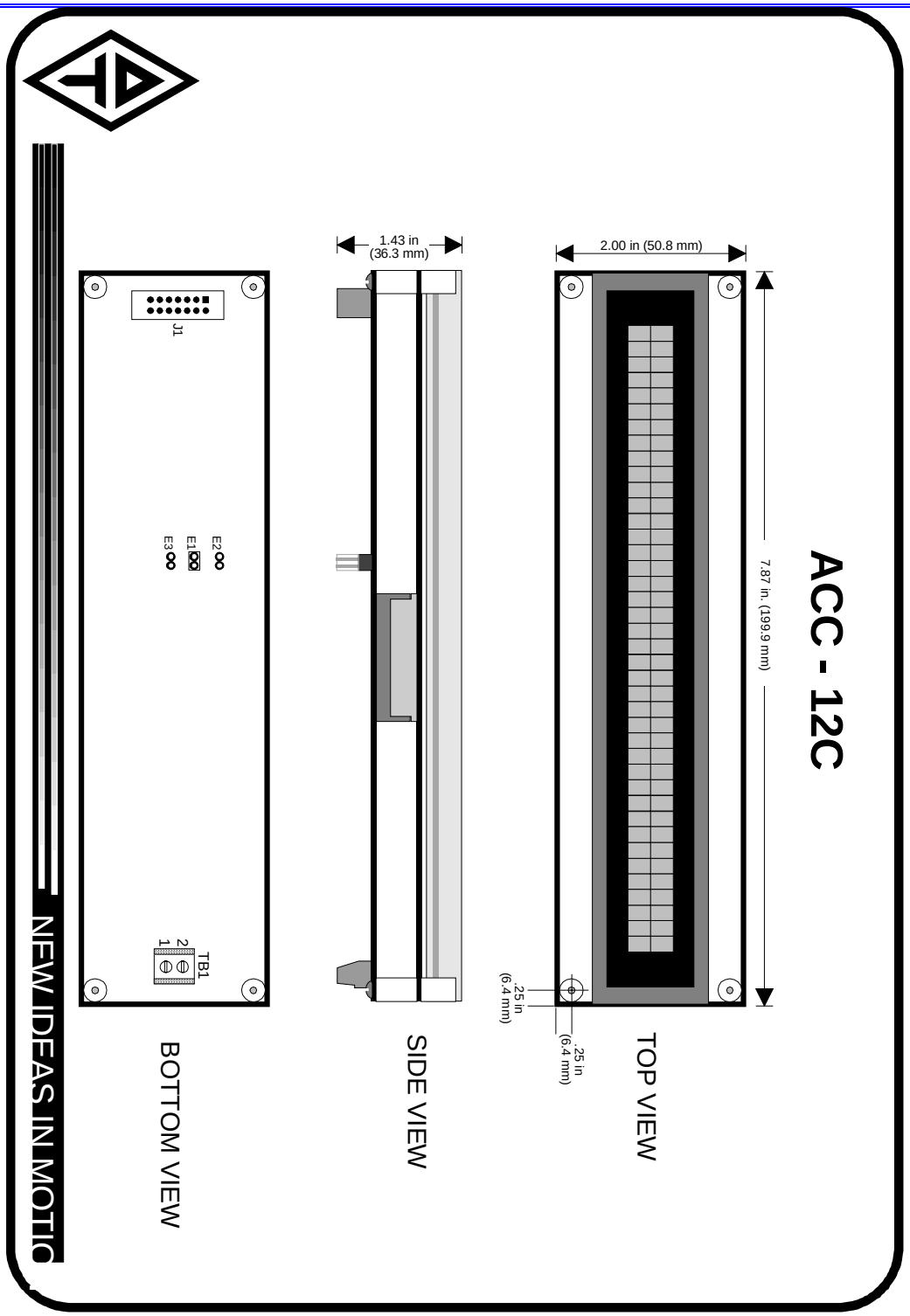
This 2-pin terminal block allows an alternative method of power supply connection to the display unit.
*In applications where the connecting cable between PMAC and ACC-12C is longer than 6', bring in power through pin 2 of TB1. Connect Pin 1 of TB1 to both PMAC's and the power supply's ground signals. Remove jumper E1.

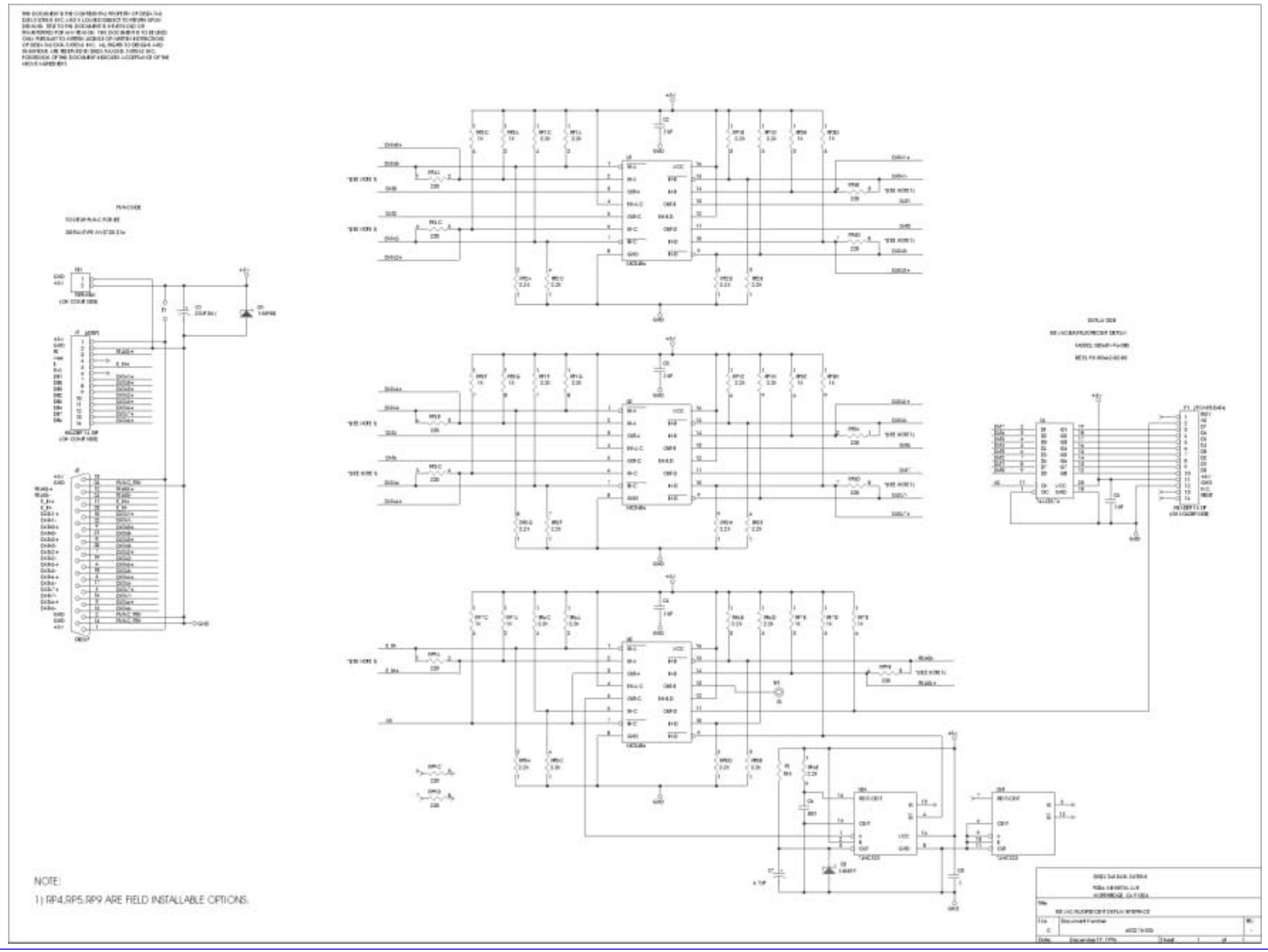
E-Point*	Physical Layout	Description	Default
E1		Install jumper to pass power through PMAC's J1 connector to ACC-12C; Remove jumper if power is brought in through TB1.	Installed
E2		For Future Use.	Not Installed
E3		For Future Use.	Not Installed
* These jumpers are located on the bottom side of the adapter board.			

POWER SUPPLY REQUIREMENTS

For more detailed description of the Vacuum Fluorescent Display specifications, refer to the IEE Inc.'s Manual (S03601-96-080). The maximum current requirement is quoted to be 580mA at 5 Volts.

DIAGRAMS AND SCHEMATICS




NOTE:
1) RP4,RP5,RP9 ARE FIELD INSTALLABLE OPTIONS.